TED (15/19) -3012
(Revision- 2015/19)

N21-06631

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE –NOVEMBER -2021.

SURVEYING II

(Maximum Marks : 75) [Time : 2.15 hours]

PART–A

Marks

I. Answer **any three** questions in one or two sentences. Each question carries 2 marks.

1. Distinguish between transit and non-transit theodolite.
2. List the types of traverse.
3. What is tacheometer?
4. What is a transition curve?
5. Define total station. (3x2=6)

PART - B

II Answer **any four** of the following questions . Each question carries 6 marks.

1. A theodolite was set to measure angle POQ. The readings of the field survey are given below. Complete the table and Find the angle POQ.

Inst At	Sight to	Left face, Right swing								Right face, Left swing							
		A			B		Mean			A			B		Mean		
		°	'	"	'	"	°	'	"	°	'	"	'	"	°	'	"
O	P	41	42	20	43	40				41	40	0	35	40			
O	Q	110	29	40	29	0				110	24	20	24	20			

2. Write down the procedure for measuring deflection angle using a transit theodolite.

3. Explain Bowditch's rule and transit rule.

4. Latitudes and departures corresponding to the sides of a closed traverse ABCDEA is given below. Compute the independent coordinates. Total latitude and departure of first station A is (600,700).

Line	Latitude		Departure	
	Northing	Southing	Easting	Westing
AB		364.30	627.00	
BC	440.50		940.74	
CD	991.00			761.90
DE		538.00		777.00
EA		529.20		28.84

5. Derive an expression for horizontal and vertical distances in tangential tacheometry when both the angles are depression angles.
6. A levelling staff is held vertical at distances of 100m and 150m from the axis of a tacheometer and staff readings for horizontal sights are 1.000, 1.495, 1.990m and 0.850, 1.600, 2.350 m respectively. Find the constants of instruments.
7. Two tangents AI and BI intersect at a chainage 2500m and the angle of intersection is 120^0. If the radius of the simple curve to be fitted is 600m, find the following:

   (i)Tangent distance (ii) Length of curve

   (iii)Chainage of point of curvature (iv)Chainage of point of tangency.

[4x6 =24]

PART - C

(Answer **any of the three units** from the following. Each full question carries 15 marks)

UNIT I

III (a) Explain how do you make the permanent adjustment of line of sight of a theodolite. (10)

(b) Explain the method of repetition for measuring an angle. (5)

OR

IV (a) Explain any two methods for prolonging a survey line using theodolite. (10)

(b) List out various axes of a telescope and their interrelationships. (5)

UNIT- II

V (a) A tunnel is to be constructed from A to B across a mountain. Coordinates of the points are given below. Compute the length and bearing of line AB.

Point	Northing	Easting
A	500.25	640.75
B	840.78	315.60

(10)

(b) What is meant by omitted measurements and what are the different cases of omitted measurements. (5)

OR

VI (a) Explain Gale's traverse table and show a typical table. (10)

(b) Explain how to conduct a theodolite traverse survey using bearings, if you are provided with a non-transit type of theodolite. (5)

UNIT- III

VII (a) A tacheometer was set up at a station A and the following readings were obtained on a staff held vertical at B. Calculate the horizontal distance AB and the RL of B. The constants are 100 and 0.

Instrument at	Staff station	Vertical angle	Hair readings	Remark
A	BM	-5º 20'	1.50, 1.80, 2.10	RL of BM=700.00
A	B	+8º 12'	0.75, 1.50, 2.25	

(10)

(b) Explain the procedure to determine tacheometric constants. (5)

OR

VIII (a) An instrument was set up at P and the angle of elevation to a vane located 4 m above the foot of the staff held at Q was 9º 30'. The horizontal distance between P and Q was known to be 2000 m. Determine the reduced level of the staff station Q, given that the reduced level of the instrument axis was 2650.380. (Hint: Apply correction for combined curvature and refraction for distance). (10)

(b) Explain when and how the Single plane observation method is used in survey. (5)

UNIT – IV

IX (a) Write down the procedure for setting out a curve using Rankine's tangential angle method. (10)

(b) Distinguish between aerial and terrestrial photogrammetry. (5)

OR

X (a) Derive an expression for setting out a curve using offset from long chord. (10)

(b) What is GIS? List down any three applications of GIS in civil engineering. (5)

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